

This Day in History... March 14, 1794

Eli Whitney Patents Cotton Gin

On March 14, 1794, Eli Whitney received a patent for his cotton gin nearly five months after submitting his application. The machine would dramatically speed up cotton processing and reshape the economy of the American South.

Whitney was born in 1765 in Westborough, Massachusetts, the son of a farmer. From an early age he showed unusual skill with tools and mechanical devices. As a boy he built small machines and repaired equipment on the family farm. He even constructed a working nail forge and built a violin by hand. These early projects revealed the mechanical ability that would later define his career.

Whitney eventually attended Yale College, graduating in 1792. At the time, he hoped to become a lawyer. However, he needed money to continue his studies. After leaving Yale, he accepted a job as a private tutor in the South.

Whitney traveled to Georgia, where he stayed at the plantation of Catherine Greene, the widow of Revolutionary War hero Nathanael Greene. While living there, Whitney observed one of the biggest agricultural challenges facing Southern farmers. Many planters were growing short-staple cotton, which could grow across a wide area of the South. However, the cotton fibers were tightly attached to sticky seeds.



Whitney invented the cotton gin on the plantation of Nathanael Greene's (pictured on the right, above) widow.

Removing those seeds by hand was slow and difficult. An enslaved person could clean only about five pounds of cotton per day. Because of this, cotton production remained limited. Greene and her plantation manager, Phineas Miller, encouraged Whitney to design a machine that could separate the seeds more efficiently.

Whitney set aside his legal ambitions and began experimenting with possible solutions. Over several months he designed a simple but effective device. The machine used a rotating cylinder with small wire teeth that pulled cotton fibers through narrow slots. The slots were too small for the seeds to pass through, which separated them from the cotton. A brush mechanism then cleaned the cotton from the wires so the process could continue.

Whitney called the device a cotton gin, using the word "gin" as a shortened form of "engine." The machine greatly increased productivity. A single person using the gin could clean up to 50 pounds of cotton in a day, compared with the single pound possible by hand.

Whitney applied for a patent in October 1793. The patent was officially granted on March 14, 1794. He and Miller formed a business partnership and considered how to profit from the invention. Instead of selling the machines directly, they planned to install cotton gins on plantations and take 40 percent of the cleaned cotton as payment.

Many farmers strongly opposed this arrangement. They saw the fee as excessive and began building their own copies of the machine. Patent laws at the time were difficult to enforce, and unauthorized versions spread quickly across the South. Whitney and Miller filed a number of lawsuits against those who copied their design. However, they struggled to win their cases.

It was not until 1800, when Congress strengthened the nation's patent laws, that Whitney finally gained some legal victories. By then, the machine had already spread widely. Eventually Whitney and Miller shifted to a licensing system, collecting fees from states and manufacturers. One agreement reportedly brought them \$50,000 from South Carolina alone.

The cotton gin made cotton production far more profitable. As demand for cotton grew in Britain and northern textile mills, plantations expanded rapidly across the South. Although the gin reduced the labor needed to remove seeds, it did not reduce the labor required to grow and harvest cotton. As cotton farming expanded, the demand for slave labor increased as well. By the early 1800s, cotton had become the most valuable crop in the Southern economy.

Whitney is most widely remembered for the cotton gin, but he made another important contribution a few years later. In 1798, during rising tensions with France, the US government awarded him a contract to produce 10,000 muskets for the military. Whitney proposed using a manufacturing system based on interchangeable parts and specialized machinery.

Although he was not the first person to experiment with interchangeable parts, Whitney helped demonstrate how they could be used in large-scale production. His musket contract ultimately took nearly ten years to complete instead of the planned two. Even so, his approach helped introduce new ideas about manufacturing that later became central to American industry.



From the 1940 Famous Americans Series



The cotton gin allowed farmers to clean cotton far faster than by hand, making cotton a highly profitable crop. As production expanded across the South, cotton soon became one of America's most important agricultural exports.

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